

ELEMENTARY

PSYCHOLOGY.

AMOS M. KELLOGG.

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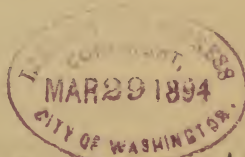
ELEMENTARY PSYCHOLOGY.

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BY

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ELEMENTARY PSYCHOLOGY.

PREFACE.

AN attempt is made in this little volume to exhibit the processes by which we *know*, by employing familiar examples and illustrations. It proposes Psychology by self-observation and experiment; it aims to centre the attention of the student upon the process itself, and get him to observe that; over against this is the commoner method of setting him to learn definitions. The result of the use of most books on the subject is to leave merely a residuum of definitions. In this book the definitions are few and far between.

The student must have his attention repeatedly called to the process of knowing in general, which involves somewhat the philosophy of Psychology. There is an outside world that has qualities that cause effects (images) in the inner world (the mind). These images are elaborated, arranged, related, and built up, so that there is an organized inner world that represents the outer world and by which it is understood and practically administered. This relation, elaboration, transformation, construction, and

organization is like the similar processes carried on in the oak-tree—automatic and self-operating. There is one force or power that does the perceiving and conceiving and thinking: these are simply different stages in the one operation of knowing. These points are briefly alluded to in various paragraphs, but will need to be looked at with an effort for unity and wholeness.

The increasing number of students desirous of obtaining clear, elementary ideas concerning the operations of the mind, as it is employed on a familiar object, impelled the writer, though pressed with other labors, to undertake the preparation of a small volume. The small size proposed made it needful to study what to leave out rather than what to put in.

This book will undoubtedly awaken in its students the desire to read other books. These, published by E. L. Kellogg & Co., are specially recommended :

Allen's Mind Studies, for Young Teachers.

Welch's Talks on Psychology.

Welch's Teachers' Psychology.

Rooper's Apperception, or "A Pot of Green Feathers."

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ELEMENTARY PSYCHOLOGY.

INTRODUCTORY.

1. WE are conscious the mind is capable of acting, and that its acting results in knowing. For example, I place some fruits in a dish and show them to you. You know they are oranges. You are conscious that your mind acted, and that the knowledge you gained was the result of the action.

2. Suppose, instead of a class exercise, we have a birthday celebration, and some fruits are brought in and placed on the table. You *know* they are oranges; you *desire* to taste them; you *decide* you will do so. You are conscious you had these mental states. By reflection you see that these states differ from each other; that to *know* they were oranges, to *desire* them, to *determine* to take them, are different mental acts.

3. In this volume the operation of the mind in *knowing* will be considered mainly; a few remarks

only will be made concerning its operation in *desiring* and *determining* or *choosing*.

4. You know what the mind does by your consciousness; thus you say, "I am conscious I see an orange." Consciousness is the *being-aware* by the mind of its acts and states.

5. **Mental Phenomena are as Common as Physical Phenomena.**—When we speak of ourselves, except our bodily doings, we describe some mental act, we tell how we feel, what we think, what we have decided to do. Longfellow describes a state of mind in "The Bridge." And I thought—

"How often, oh how often!

In the days that had gone by,
I had stood on that bridge at midnight,
And gazed on that wave and sky."

6. Our interest in people is concerning what they think; we desire to know their thoughts. We know people as we know their thoughts. "As he thinketh in his heart, so is he," the Bible says.

Although constantly busy with their mental states, it is difficult for most people to think about them and notice their likeness to other mental states, and observe how one mental state follows another, etc.

The science of Psychology is an arrangement of our knowledge of our mental acts and states. Ordinarily we try to see *what* the mental state or act is; as psychologists we try to see what *kind* of state or act is in the consciousness.

7. If we observe a young child we see it place an

ivory ring in its mouth, or grasp after a shining object—a spoon, for example. It finds that the spoon struck on the table or dish will produce a noise. It goes on in a most active way to ascertain by experiment the capabilities of the spoon. At a later stage it learns that a potato is prepared for food by boiling or roasting; at a still later stage it learns that the potato grows in the ground, and that other vegetables are produced in the same way.

8. If we observe an adult, we see that he has gathered a great many facts into more or less coherent wholes; for example: that the spoon is made of silver, which is a metal and has a certain specific gravity, etc.; that the potato belongs to a certain group of the Nightshade family, along with the tomato, tobacco, belladonna plants. So we conclude that the action of the mind is evidently to gather knowledge into wholes; this may be stated to be *the law of knowing*.

9. This book contains a statement of the main processes of the mind in knowing. To take up the study of psychology we turn our attention to mental phenomena; we observe the processes by which the mind knows. In using the term *knowing*, more is meant by the term than when I say that I know a certain fruit is an orange. If a plant is shown me and I observe that it is gamopetalous, has alternate leaves and its corolla plicate in the bud, I know it is one of a great family; I know it in its relations, in its wholeness. The knowing power takes the elements furnished by observation and arranges them

so that we are able to comprehend the object in its relations.

QUESTIONS.

What is necessary to knowing? (Sec. 1.)

Exemplify the three states. (2.)

What state is considered in this book? (3.)

Exemplify consciousness. (4.)

Exemplify psychological phenomena. (5.)

How is the science of psychology constructed? (6.)

Show difference between child and adult. (7.) (8.)

Exemplify knowing. (9.)

THE SENSATION STAGE.

10. Obtaining Sensations.—Our knowledge begins in the senses. For example: I show you an orange; you take it in your hand; now, if I watch you closely I shall perceive that your mind seems to operate on the something that you obtained by feeling of the orange, by observing its appearance, by inhaling its fragrance and by tasting of it. It is perceptible that there were effects produced on your hands, eyes, nose, and tongue, and that you were mentally at work upon these effects. It is plain that after seeing, touching, tasting, hearing, and smelling of objects something in the object affected the mind and that the mind operates on this something.

11. How Sensations are Obtained.—I place an orange before you on the table; you turn your eyes to it, and see that it is round and that it is yellow; you apply your mouth to it and find that it is sweet; you bring it to your nose and ascertain it has fragrance; you press your hand upon it and determine it is rough; you snap it with your finger and find it gives forth a sound. You have five ways by which the qualities of the orange reach your mind: by your eyes, by your tongue, by your nose, by your ears, by your touch.

12. There must be effects on the senses to start with. If you doubt the fruit to be an orange, you

smell of it again, you taste of it again, then on what the senses bring in the mental powers proceed to operate. So there are two stages: (1) The in-bringing by the senses; (2) The working upon and the working over the sense-products.

13. Of Sensations.—We learn from physiologists that there is a lens in the eye and that the rays of light from the orange cause an image to be formed on the optic nerve which is spread over the back part of the eye, which is called the retina. When the image of the orange falls upon the retina it causes an impression, and this impression on the retina is carried along the optic nerve to the brain, causing an effect, a sensation. This sensation the mind becomes conscious of; it is material the mental powers can operate upon.

14. There is a nerve in the mouth that is impressed by the juice of the orange; this impression is conveyed along a nerve to the brain, where it becomes a sensation of taste; it is an effect of a quality in the juice; this effect on the nerve is an impression; in the mind it is a sensation.

The nerve in the nose, in the ear, in the hand, each also were acted on by the qualities in the orange; each received an impression; these impressions coming to the brain become sensations in the mind; these sensations represent qualities in the orange; the mind knew these qualities existed in the orange.

15. There are five ways in which the outer world may obtain access to the mind—through the eye, the ear, the tongue, the nose, and the surface of the

body ; the outer world can produce sensations of five different kinds in the mind, and thus represent itself. It is the qualities of objects that cause effects on the inner world of the mind, not the objects themselves.

16. The impression on the nerve in the eye, hand, or tongue is the touch of the external world ; it is the effect of the external world. The nerve is planned to receive and transmit the impression. A sensation follows the impression ; it is a mental state. A sensation is a mental state produced by an impression on a sense-nerve. As you hear and recognize the knock of a friend at the door, so does the mind recognize the touches of the external world ; a sensation follows each of them.

17. The impression produced on the eye by the orange becomes a different sensation in the brain from that which comes through the tongue, nose, ear, or finger. Smell of the orange ; touch it : can you compare these sensations ? The nerve of the eye is planned to receive impressions pertaining to form and color ; the nose, those relating to fragrance. Many objects can produce five sensations in the brain.

18. We conclude then

(1) That the different qualities possessed by the outer world can impart an influence to the mind through the nerves going from the eye, the ear, the nose, the tongue, and fingers ; and,

(2) That the mind starts on its course of knowing

by dealing with the sensations these different qualities produce.

The beginning is with a quality—sweetness, for example; this is in the object. This sweetness produces an impression on the nerve; this impression on the nerve coming to the brain produces a mental state, a sensation. The quality differs from the impression; the impression differs from the sensation. These sensations become the foundation stuff for knowledge; they are the raw materials out of which knowledge is constructed.

19. Attending to Sensations.—The quality in the object, as we have seen, produces a sensation in the mind; but it does not drop into it as a pebble drops into a box. Let us follow the sensation.

I give you each a piece of orange; you taste it; you are conscious your mind has taken hold of something that was caused by the juice on your tongue. But more, you are conscious that your mind was alert, or *ready to be affected*. For example, hold the piece of orange in your hand a few inches from your nose. I want you to be ready when I say "Smell of the orange" to do so. Are you not conscious of the fact that your mind is directed towards what may come in on the nerve from the nose?—that it is ready to seize on the sensation when it enters?

You are conscious, too, that you made some effort to cause your mind to be fixed on the smell expected. You are conscious of a purpose in the matter. You can compel the mental power to select and to dwell upon a sensation; this is termed *attention*. You

employ the will, the determining power in the matter (see paragraph 2).

20. Again: I cut an orange in pieces and give each a piece; suppose that as you place the piece in your mouth some one enters the room and communicates some very exciting fact—as that some one you knew has met with an accident. After he is gone I ask you as to the taste of the orange and you are unable to state whether there was anything peculiar in its flavor; some are undecided as to whether they tasted it at all.

But there must have been an impression on the taste-nerve, and a sensation must have followed the impression. Evidently the sensation was not drawn out of the throng and appropriated or added to the mental stock. To do this requires a mental effort, requires attention.

You ride in a car: the people in the car, in the street, the horses—all produce impressions that in turn become sensations; you return perhaps, only remembering you met a certain single individual; your mind selected one sensation out of thousands; it *attended* to that, as we say; that one was incorporated with your previous mental stock; the rest were neglected, were dissipated.

21. Suppose you take a basket and go to the orange-tree; it is loaded with luscious fruit. You see one and grasp it and put it in the basket, then another and another. You pass by hundreds. So it is with sensations: thousands throng in upon the

mind ; it attends to a few ; the rest are as if they had never entered.

22. Illustrations.—I may be reading a book and not notice that you speak to me. The sensation caused by your voice was not attended to by my mind : it was attending to some other sensation. You speak again, and my mind leaves the sensation that comes from the book and applies itself to that which came from your voice.

Again : I am talking to you ; you desire to hear what I say ; some one enters the door and speaks to another, but you compel attention to the sensation that my voice produces in your mind. In this case your mind does as you direct it. While, therefore, attention is usually automatic in its operation (that is, it centres itself without an act of the will on the sensation), it may be compelled to centre itself as the will decides. This means that, while attention is largely involuntary, it may be also voluntary (*volo*, I will).

23. We conclude, then, (1) that the mind has a power to select and add to its stock from the sensations that throng in upon it ; (2) that the selection is caused by the importunity of, or the interest in, the impression ; (3) that the mind can, in part at least, compel the selection of some particular sensation.

24. It is apparent from what has been said that the mind may take an interest in its acts. This means *there is a feeling side to all mental operations*.

While this book aims to discuss the knowing operation, it must constantly be borne in mind that

the feeling or interest side actively exists. As when I look at one side of a book, the other side is as important, though not then being inspected; so, in considering the knowing side of the mind, it must be remembered that the feeling side constitutes a most important side or part of the mind. (See 74-80.)

It is also apparent that the *will* side of the mind is being constantly exercised. If I know, it is because I choose or will to know; I take an interest too in the knowing. The whole mind is employed.



25. Retaining Sensations.—"What was it I laid on the table yesterday?"

"An orange."

"What was its color?"

"Yellow."

These answers show that the sensations produced in your mind by the orange left something that represents them. It is plain that your mind has the power to gain and hold representatives of qualities of things. We have a power to gain knowledge and to retain it. Suppose I had introduced twelve persons to you yesterday. Would you have remembered the names of all of them? If, as I introduced these twelve persons to you in succession, Mr. Jones had smiled very pleasantly, you would all have remembered him. You would remember him because you were interested. Then, again, if I had charged you to remember Mr. Smith when he was introduced,

you would have done so. You would remember him because you willed that your memory should do so. (See sections 1 and 19.)

26. From this we conclude—

(1) That the mind has a remembering or retaining power which it exerts involuntarily. You did not try to remember that an orange was discussed yesterday.

(2) Interest has much to do with remembering; it caused you to remember Mr. Jones.

(3) You can cause the remembering power to act; that is, remembering may be a voluntary act. You tried to remember Mr. Smith; this shows it possible to cultivate the memory.

27. **Summary.**—(1) The beginning is with the senses that receive impressions: these become sensations; they are the effects of the outer world.

(2) The mind by attending to these representatives or images of the qualities (the fragrance, the yellowness, etc.) incorporates them with its stock or materials already on hand.

(3) It can bring them up before itself.

Let the student illustrate each of these statements, giving original examples.

QUESTIONS.

Explain the effects produced by the orange on the senses. (Sec. 10.)

Show the five ways the senses operate. (11.)

Note the two stages. (12.)

Explain about impressions on the optic nerve. (13.)

Explain about impressions and sensations. (14.)

Explain the difference between sensation and impression.
(15.)

What is the touch of the external world? (16.)

Can you compare sensations from different senses? (17.)

Give a summary of sensations. (18.)

Give example of sensation. (19.)

Show how attention selects. (20.)

Give another example. (21.)

Interest and attention. Explain. (22.)

Give summary of attention. (23.)

Exemplify the feeling side of the mind. (24.)

Explain retention. (25.)

Give three points relating to attention. (26.)

Give summary of sensations and attentions. (27.)

THE PERCEPTION STAGE.

28. Operations on Sensations.—What does the mind do with the sensations it experiences? You take up a hot coal; you have a sensation. You are conscious that the mind does not stop with the sensation, but that you attribute the heat to the coal; you join the heat, the redness, the weight; the term “hot coal” which you use is a name for a combination of several sensations. You passed from the sensation of heat to a knowledge of a thing; this is *perception*.

29. Sensations are United.—I put the orange before you again. You taste it, you smell of it, you notice the form and color, you snap it with your fingers, you feel of its surface. You must have five sensations in your mind, and they are all different from each other: this is plain. But these five sensations have evidently united themselves into one whole thing, which you term “the orange.” We do not force the mind to unite them; it does this involuntarily. It is the inborn way the mind has to act upon the sensations that enter it; it does it of its own accord. If I give you an apple you will have five sensations, and your mind will unite the five sensations arising from the apple.

It is as we see it in the physical world. Workmen bring bricks, stone, and mortar and cast them

down in heaps; other workmen seize upon these and properly relate them, and a building is the result. We may compare the senses to the workmen who bring bricks and mortar; other mental powers are like those who join the bricks into a building.

30. But the first step taken toward knowing the orange is the uniting of the five sensations that come from it. It is an attempt to gather fragments into wholes. (See sec. 7.)

The mind is constantly gaining sensations; they are representatives of the qualities of things brought before it. The mind also as constantly (of its own accord) proceeds to unite these. The first step in knowing is to *unite sensations*.

We shall see further on that this *uniting power* of the mind is in ceaseless operation, and that it does more than to merely unite sensations, and that it goes on after it has united sensations. It goes on to cohere, according to mental law, all the materials that come within its reach, and the effect of this uniting, cohering, and conjoining operation is to cause an inherent coalition of the accumulations of the mind.

31. **The Joining of Sensations produces Percepts.**—The smell of the orange, its feel, its taste, etc., did not stay separate in your mind. Your mind joined the fragrance, the roughness, and the taste, and you became conscious of an object from which they emanated, to which they belong. This process gave you a *percept*; thus you *perceived* the

orange. This operation upon sensations is called *perception*. It is the first step in knowing. The orange gave your mind sensations; your mind operated on them and gave you knowledge—something your senses did not give you.

When I obtain a sensation I find I at once try to find something to join it to. For example, in the dark I feel a smooth object. I crave knowledge. I want something to join this smoothness to; I strike a light and see whiteness. I now perceive it is a piece of ivory. I had to have the sensation of whiteness that came through the eye to unite with that of smoothness that came through the hand, in order to enable me to perceive that the object before me was ivory.

This joining of sensations—do we will it, or is the joining automatic? It is plainly automatic.

32. The youngest child at once enters on the mental occupation of perceiving. It takes hold of a fruit; it tastes it; the two or more sensations that come from it fuse at once; the child knows they belong to the object before it; it *perceives*. The mother says "apple;" this the child understands to be the name of its perception, of its knowledge; it is the name of the thing that gives rise to the peculiar sensations it had. Thus it goes on day by day; by his perceiving force he obtains percepts. By his remembering power he holds his stock of percepts. This is the main business of childhood.

33. A sensation is not allowed to stand alone; it is quickly united with some other sensation. A per-

son has a sensation produced by a noise; he sees a clock on the mantel, he refers the noise to the clock—he localizes it. He joins the sensation caused by the ticking to the sensation caused by the shape and color. He has made a percept—that is, he *perceives* the clock by doing this. The mental state has passed to a higher stage by the localizing or conjoining the sensation to the clock.

The mind persists in turning its sensations into percepts and accumulating a stock of them.

34. The stock of percepts that may be accumulated is very extensive. Of color we have percepts of red, blue, etc. Of surface we have percepts of smoothness, roughness, etc. Of sound we have percepts of loudness, etc. By effort we may acquire many degrees (probably 50) of the pitch of sounds in music.

35. **Mental Building with Images.**—A representative, or image, as it may be called, of an orange may be joined to another or to something else. I put the orange on the table, and at the distance of one foot I place an apple. Close your eyes; you have now an image of the orange and of the apple. Can you mentally put the image of the apple on the orange? Yes. Close your eyes again. Can you place the orange on the apple? Yes.

You can join the percepts that you have accumulated to construct something in accordance with some pattern or idea. You can put an eagle's head, on a man's body as the ancient Egyptians did; or a man's head on a lion's body, as the Assyrians did.

If a sculptor, you can take clay and make it like a model's face, but put on a better nose than he has. You can build very incongruous things together, or things that have symmetry and beauty.

36. This building up something in the mind out of the percepts it possesses is called "Imagination" it is the image-building power.*

I put the orange on the table again; tell me now, can you conceive of the yellow being a more golden yellow? Yes. You can build on that yellow in a variety of ways: you can make it a reddish yellow or a greenish yellow. You can change the shape of the fruit, making an ovate orange or a prolate orange. You can make it a large orange or a small orange.

37. In the building or joining process (sec. 32) if the materials are jumbled together without regu-



* These constructions might be called *imaginals*.

larity, we say it is a *fanciful* arrangement. The Japanese largely employ the fancy. If it is done with regularity and according to some pattern, we say it is a higher kind of building, and say it is the work of the *imagination*. The Greeks were noted for excellence in this higher composing of materials. This is true in music, painting, drawing, and writing.



38. Percepts may be Retained as well as Sensations.—We retain percepts by the remembering power, so that they may be brought up in the mind; as for example, the faces of our parents and friends, the house we live in. The tendency is to retain all percepts, but those that make the most impressions stay by us. We have representatives of a great many of the objects that we have become familiar with, and can recall them. You can bring up the representative of your room, of the front door of your house, of the portrait of General Washington.

39. The power of making percepts wonderfully increases our mental stores. We started with sensations. The uniting power of the mind gives us a stock of percepts. Notice that these sensations put together in a percept are not permanently joined. I can join the sensation of yellowness that came

from the orange to something else—to an apple, for example. The power to retain is applied to what the mind perceives and imagines, as well as what it retains through the senses.

40. Association.—Let us keep before us the fact that our minds are full of percepts, that stand to us as representatives of the objects without us, and that they are held there by the remembering power. I put the plate and knife on the table, and reach my hand into the basket and pause. You are expecting I will take out something, are you not? What is it? “That you will take out an orange.”

It seems, then, that you have been joining or uniting the placing of the plate on the table and the placing of an orange on the plate. No sooner did I put the plate there than you expected the orange to be put on the plate.

41. This connection of two mental states so that one brings up the other is called *association* (*socius* means companion). One mental state is accompanied by its companion. If I had for several days divided oranges among the class at the close of the lesson, you would have expected the distribution; that is, you would have joined or associated that act to the act of dismissing the class. The joining power of the mind operates in the way of making companions of percepts; one percept brings up the other; each is held by the remembering power, but to each is attached another by the associative power.

42. It is clearly apparent that there is a power in the mind that forbids any sensation or percept to

stay separate and alone. There is an unresting effort to unite the materials that are gathered. To associate mental materials is only one of the ways it disposes of them. The associative influence takes charge of our mental operations when we allow trains of thought to proceed of themselves.

I sat down and looked at an orange; then I thought of an orange-grove where I walked at Rockledge, Florida, and of picking the fruits, and of friends; then of the Indian River there, of the boats on it, of Jupiter Lighthouse, Lake Worth, the cocoanut groves, of a friend met there who lived in New Jersey, then of his New Jersey home where I saw him, and of a great snow-storm there experienced.

43. Let us look into this phase of mental activity just as we did into the attending and remembering activities. Did you force your mind to unite the two things—the placing a plate on the table and the taking of an orange from the basket? No, they united themselves. That is, association is involuntary uniting. But I can make my mind unite the date 1492 with Columbus, so that while my mind has created in it the power of involuntary association, I can compel my mind to associate things.

44. **Trains of Thoughts.**—By watching our mental operations we find that our mental stock is not resting, like bricks placed in a wall, but rolling on, like trains of cars; they form into “trains of thought,” as it is called. As cars in a train are coupled together, so are thoughts in the mind. They rush along as people in a crowded street, and we be-

come tired of looking on and seeing these rapidly moving processions. People read books and newspapers so as to control the trains of thought.

45. The connection of mental materials may be very loose, as in *trains* of thought (sec. 44), exemplified by the people passing by your window on the sidewalk of a crowded street; or *association* may direct the connection and make it a little closer, as if the people came out of a church and those acquainted or related joined in groups; or *imagination* may control, as if they formed in military order.

QUESTIONS.

What is done with the sensations? (28.)

Illustrate the union of sensations. (29.)

What is the mental attempt in perception? (30.)

What is produced? (31.)

Explain about sensations not standing alone. (31.)

What is understood by the term "apple"? (32.)

What will the mind do with its sensations? (33.)

As to stock of percepts. (34.)

Illustrate imagination. (35.)

Illustrate further. (36.)

Differentiate fancy and imagination. (37.)

As to retention of percepts. (38.)

As to increase of mental stock. (39.)

Give example of association. (40.)

What is association. (41.)

As to junction of mental materials. (42.)

Is association voluntary? (43.)

Trains of thoughts. (44.)

Different joinings of the mental stock. (45.)

THE CONCEPTION STAGE.

46. Forming Concepts.—The first result of the effort for attaining a unity was a junction of the sensations that came from a single object—it was a sensation conjunction; it gave percepts. The several sensations have been related; a condensation has been effected, but a deeper unity is possible.

You see several oranges. Each has color, form, fragrance, etc. After a time you feel there is lying back of all an *idea* of an orange, as you say. You can bring this idea of an orange into your mind as well as a percept of an orange.

Note when I show you an orange, and then put it into a basket out of sight, and then ask you to recall it, and you do so, you have a percept to recall. What you recall is the representative of that orange. But this “idea” of an orange is different.

47. I have a basket here, and talk to you of an orange there is in it. You form an “idea” of that orange in your mind. It is not a very definite one, however. How about its size? How about its color? The “idea” you have of an orange is a generalized orange; it has yellowness; it is round; it is of the average size. This generalized orange is called a *concept* of an orange.

We form concepts of a man, of a horse, of a house, of the numerous things; each concept has come from comparing several of one kind. The concept of a house has all the absolutely essential parts of a house—the general frame, the roof, doors, and windows. A concept is obtained by unifying the several percepts coming from several things of one sort, dropping all but the essential parts, and uniting them.

48. Not only do we form concepts of things, as of an orange, but of the qualities also. For example, you have an concept of about the right amount of yellowness there should be in an orange. Out of a dozen of oranges you can pick out one that is more of a typical orange as to its color; you can pick out out one that is most typical in its shape. You mean by this that these oranges agree as to yellowness and shape with your concept of an orange.

49. When I show you an orange, and you say "It is a fine orange," you are talking concerning a percept produced by the united sensations arising from an object before you. But when you speak of an orange in a general way, as "The orange is a fine fruit," you are speaking of your concept. Suppose two persons discuss the orange. One says, "The orange is a handsome fruit." Another, "The orange is juicy." What was in their minds when the term "orange" was used? It is quite different from the mental representative—the image present when an orange is in the hand. It is plain that parts of several percepts have been taken and joined, and something got that represents all of them. This

something is not so vivid as the percept. One will say that it is "dim" or indistinct compared with the percept. This combination of the essential parts of several percepts is what is meant by a *concept*.

50. It seems that my mental powers saw that there were like points or features in the several percepts of the orange, and it took these and combined or assimilated them. When I saw the orange for the first time I knew that as a distinct object—I had a percept or representative of that one orange. After I have seen several, I find I have something that stands for them in general.

Suppose I put this figure on the blackboard,

$\begin{array}{ccccccc} & \times & & & \circ & & \\ + & & + & & \circ & & \circ \\ \times & & & \times \text{ and then this, } & \circ & & \circ \\ + & & + & & \circ & & \circ \\ & \times & & & & \circ & \end{array}$

and then this.



Now I erase them

all, and you are presently asked, "What kind of figures were placed on the blackboard?" (Not *what* figures, but what *kinds*?) You reply by saying



this, | | which you give as showing the



kind. It does not exactly represent any one; it gives features in which all agree. The general shape differs in some particulars from each figure that I gave, so the concept of the orange only deals with the general features.

51. Concept-forming, or conception, discovers similarities and connects them. The combining-power, (see section 26) is here at work, but it works now on like parts of several percepts. In the case of the percept the combining-power put together several sensations; the ground of joining them was that they arose from one object. The concept arising from seeing five oranges is formed by joining the similar things in each—the shape, the color, the form, the perfume, etc. The ground of joining them is in that they here form like functions.

52. This power to form a concept of an orange or construct a something that is capable of representing all oranges, is capable of higher flights than seeing common features as a basis of unity in like things; the joining or combining effort is ever at work. It does not rest with finding similarities in several oranges, and conjoining them, or conceiving them as conjoined. It passes on to conjoining similarities

everywhere. For example: I show you an orange and a banana. You have knowledge that they both grow on trees, both have seeds, an outer skin, and both are edible. The common features are connected by you under the term "fruit." There is no object by the name of "fruit;" it is a term for a concept.

53. This formation of concepts is a great feature in mental operations. There is comprehensiveness in a concept: thus we comprehend the banana and the orange when we call them both "fruit." To form the concept "fruit" we had to compare, and comparing things is the basis of thinking. So that there is much more intellect employed in concepting than in perceiving.

54. The concept-forming power is restless so long as it sees common features or common grounds. For example, it sees common features in the peach, the cherry, etc., and forms what the botanist calls a "Plum class;" so it forms the "Spiræ class," the "Strawberry class," the "Rose class," the "Pear class," etc. Then it sees common features in these classes, and forms them into what the botanist calls the "Rosaceæ" family. Having grouped all plants into families, it groups them into orders; it goes on until it has got at the concept in the mind of the Creator, if possible.

55. The concept-forming power is thus the classifying power, the power that forms classes; this enables us to put our knowledge into a scientific form. As just shown, certain common features are

seen in certain plants, a concept is formed of a class, and so on until all plants are classified ; thus arises the Science of Botany.

Thus all sciences arise. The thinking mind is not satisfied until it reduces all its knowledge to a scientific form.

Concept terms are common. A vast number of the terms we use in speech are concepts. Take, for example, the terms soldier, sailor, preacher, teacher, dude, hay-seed, color, weight, perfume, smooth, rough, good, cat, horse. Almost all names quickly pass from the percept to the concept state. But these concepts are not allowed to heap up ; the inherent coalition-forming power sorts them over, as just shown concerning plants, and unites them on still larger lines.

QUESTIONS.

Illustrate getting the "idea" of orange. (46.)

How are concepts obtained? (47.)

Other concepts. (48.)

Differentiate concept from percept. (49.)

Illustrate concept by figure. (50.)

What is ground for the concept uniting? (51.)

Illustrate other uniting attempted. (52.)

What value in concept? (53.)

How does it become the classifying power? (54.)

How used in science? (55.)

Give ten concept terms. (55.)

THE THINKING STAGE.

56. Thinking.—We have just seen that the mind is perpetually busy with its mental stores: its sensations are being turned into percepts; concepts are being constructed; and thus the stock of mental materials is put in order.

In the preface it was pointed out that the inner—the mind's—world must represent the outer world; now there is an interwoven relation between all the parts of the outer world, all having proceeded from one Creator. The mind has the power to unify and relate the images that have resulted from the touch of the outer world. The unification is a conjoining operation, as seen in perceiving and concepting.

There are many ways of joining: two boards may be joined by nails, or by glue, or by dovetailing. There is need of a broader unity than has been reached by concepting. The concept is a conjunction of like points in several things; but there is a relationship existing to other things. The orange is related to the tree. *The relating of our mental stock is done by thinking.* Thinking is an attempt at a higher unity than is obtained by concept-making.

57. I show you an orange; you have a concept you term *yellow*. You relate the object and the concept, and say, "The orange is yellow." This is a

thought ; it is a statement of a relation the mind has perceived. We think to relate things ; by relating them we comprehend them. Thinking is arranging and relating our concepts ; it is done by statements.

To see an object and to be told it is an orange is merely to name it. The mind seeks to *comprehend* this object. To do this I connect other knowledge to it. I connect the facts that it grows on a tree, has seeds, is good for food, etc. This is what is effected by thinking. Thinking is a general name for sorting over, arranging, combining, and thus relating our mental stores.

58. A mental process of joining two concepts is being carried on perpetually by the mind, and yields thoughts. A thought is a conclusion of the mind in which concepts are connected, one as a subject, the other as a predicate. Sometimes a percept and a concept are united, as, "This thread is strong." One concept and two concepts may be united, as, "An orange is spherical and yellow ;" this gives a compound thought.

It is well to bear in mind that when the orange is related to a concept, as in the statement "The orange is yellow," that it stands free to be united or related to other concepts. I can use the same concept "orange" at once with the concept "round," and say "The orange is round." In other words, the relating process of thinking does not put my mental stores into permanent combination.

59. **Thinking is an Automatic Process.**—The teacher may say to the pupil "Think,"—meaning

that the pupil shall sort over and unite some of the mental stock on hand. Some pupils are slow or lazy in the work of arranging and uniting their concepts, and need to be urged to take up the work. They prefer to let the trains of thought (see sec. 44) roll on with no effort on their part ; but under the influence of the teacher the attention is turned to some object. The pupil knows the object to be iron ; he knows what "heavy" means ; he handles the iron ; the process of relating the two concepts is done by his mind. In doing this he "thinks ;" i.e, he makes a statement, and says, "Iron is heavy".

60. Judgment. — Thinking is a general term ; there are many kinds. An arrangement of two concepts in a statement is termed a judgment ; it is a higher kind than forming percepts into concepts.

For the practical business of life it is indispensable to get our concepts into a unity ; we do this by judgments. Some join or unite much more readily and accurately than others ; they are said to have good judgments. Some observe quickly the color, size, fragrance, etc., that exist in a good orange ; that is, they form concepts of what the essential features in a good orange are. They compare the features of the orange before them with these concepts, and can say, "This is a good orange ;" that is, they *judge* this is a good orange.

61. As just said, there are various kinds of thinking. There is thinking in concept-making, as when I join the similar things in several oranges and get the concept I term "orange." It is a higher kind

that is employed in constructing the judgment—"The orange is a fruit;" "The lion is a quadruped."

As there are many kinds of moving one's self towards an object, as creeping, crawling, walking, running, leaping, etc., so there are many ways of *thinking*, that is, of joining or relating our mental store; concept-making is one; next comes judging.

62. Analytical Thinking.—Sometimes we separate a concept into parts. Thus I may ask you to separate your concept of orange into parts. (You will remember that the mind went on to unite like parts in its percepts to form its concepts. It is possible to reverse this process.) You will say, "The orange is yellow, is round, is fragrant, is sweet, gives out a dull sound, has a rough surface, grew on a tree," etc. I may ask you to separate your concept of a man into parts. You will say, "Man is intelligent, rational, has a mortal body and an immortal mind," etc.

This process is called analysis—it is analytical thinking. The object of it is to render the knowledge more clear and distinct. The teacher often causes the pupil to resort to it to see if his concept contains all the parts which belong to it. "Tell me about New York," he says. The pupil gives particulars relating to the rivers, mountains, cities, products, etc. If he omits the fact that the Catskill Mountains lie in the southeastern part, or that New York City is the metropolis, the teacher judges that his concept of New York is incomplete.

63. Synthetical Thinking.—When I obtain a new percept concerning oranges,—for example, that one

was converted into marmalade,—by thinking I know that must be true of another, or all oranges. This is a different kind of thinking from the analytical; it is of the *synthetical* kind. I know this orange may be made into a marmalade; I say, “Another, in fact all oranges, may be made into marmalade.” I perceive a truth about one orange and predicate it about all oranges. A child sees snow and ice, sugar and salt, dissolve in water; he connects this result with some common element, as heat; in doing this he thinks synthetically. A child who sees another man beside its father thinks synthetically if he terms the man a “papa;” he classifies the man.

Sir Isaac Newton formed a concept of a gravitating influence in the earth to account for the falling of the apple. He went on to connect the moon with this influence. He saw the matter in the earth had an attractive influence on the matter in the apple. He *thought* (synthetically), “The matter in the earth has an attractive influence on the moon, in fact on all bodies of matter.” This is the kind employed in invention and discovery; it tends to make a unity in knowledge and leads to progress.

64. Thinking in Syllogisms.—Sometimes two judgments are arranged so that a third judgment is reached as a conclusion. This is a syllogism :

Heat expands all metals.

Iron is a metal.

Heat expands iron.

The first thought is called the “major (larger) premise.” The second, the “minor (lesser) premise.”

The third, the "conclusion." This arrangement is often made in order to obtain clearness in thinking. The major premise has a general statement or thought; the minor premise has a general statement or thought; the conclusion has a particular statement.

The arranging of two judgments as above is a mental process called *reasoning*; we reason in syllogism, or by syllogistic thinking.

65. Thinking by Intuition.—I show a child (not too young) two points an inch or two apart, and say the "shortest distance between them is a straight line." He assents; that is, he sees this is a correct judgment. It is thinking by seeing into, by insight. Such a judgment is called intuition. There are many other judgments that are intuitive. "Things equal to the same thing are equal," "Things that fill the same space are equal," are some of these."

66. I show you a triangle and prove that the sum of its three angles is 180 degrees; you see at once the general truth, that the sum of the three angles in any triangle, in the moon, in Jupiter, in Saturn, is 180 degrees; in fact, that it is impossible to make a triangle the sum of whose angles shall be less or more than 180 degrees.

67. You enter this room and see an orange on the table and prepare to make it your own; you find an objection within to the proposition. The truth that it is wrong to appropriate another's possessions is recognized, like the axiom calling the shortest distance between two points, as a general

truth. Your proposition to take the orange does not agree with this admitted judgment. In recognizing the general judgment and applying it the feeling side is much concerned.

68. I place some oranges, perhaps still on the branch, before several persons; one of them may take colors, a brush and canvas, and produce a charming picture—some particular form of beauty illustrated by the oranges. You conclude that the artist painted in accordance with an insight (intuition) he had of the beautiful; the oranges exhibited to him had forms and colors that agreed with his insight; they embodied his ideal; he painted them to make a statement of what he conceived to be beautiful; he used the oranges to illustrate his judgment. It is to be noted that there is much *feeling* in all art. (See 24.)

69. I place an orange before you; you know it has five qualities; you are certain there is a *substance* in which these qualities unite, but you cannot by your senses get hold of the substance. You feel it to be necessary to fit the conditions of the things of the world in which you are that there be such a thing as substance. This conclusion you reach by intuitional thinking.

70. You place an orange on the table; it is gone when you return. You cannot be made to believe but some cause produced this effect; because you have formed a general judgment that there must be a cause for every effect. You cannot see, feel, hear, taste, or smell causes; you intuitively conclude that

there are causes for all effects. As in sec. 60, you feel it to be necessary to fit the condition of things that every effect have a cause.

71. The child is told that "there is a Creator." He assents, at first passively; later on he *intuitively* sees that it is necessary to believe this statement.

72. Intuitions (intuitional judgments) are marked by the quality just referred to; there is a necessity for the conclusion. My senses give me five qualities in the orange; I intuitionally judge a substance is necessary. I may have to prove that two triangles are equal; but you demand no proof that a straight line is the shortest distance between two points; you perceive intuitively that it must be.

QUESTIONS.

What is thinking? (56.)

Illustrate thinking. (57.)

What is a thought? (58.)

Thinking is automatic. (59.)

Illustrate judgment. (60.)

As to different kinds of thinking. (61.)

Illustrate analytical thinking. (62.)

Illustrate synthetical thinking. (63.)

Illustrate syllogistic thinking. (64.)

Illustrate intuitional thinking. (65, 66, 67, 68, 69, 70, 71.)

Give one quality in an intuition. (72.)

THE WILL.

73. I place an apple and an orange on the table, and I say, "Take which you prefer." You take the orange. In doing this you employed your mind differently than when you discovered the orange to have a sweet taste. When the mind joins the sensations that come in from the orange, obtaining a percept ; when it goes on to form a concept of an orange, or to think upon oranges,—it is using the *knowing* faculties. In choosing and taking the orange it used the *deciding* or *will* power.

It is plain in taking the orange that some knowledge must have prompted the choice of that. As the mind acts in choosing in accordance with the knowledge it has, we say "The will waits upon the intellect," that is, the intellect acts first. I have a feeling of hunger ; I find my thought-trains are now loaded up with images of bread, oranges, etc. ; I remember the pleasing taste of the orange ; I decide to obtain that.

Feeling—Knowledge—Will, all are united in this operation.

THE FEELINGS.

74. I place some oranges on the table; you are conscious that you want one; you have a consciousness that the orange stands in a different relation to you than when you contemplated it as an object of knowledge—when you thought about its size and color. It may be you are hungry—your desire for the orange would then be classed as an *appetite*; or you wish to give it to your brother or sister—your desire for it would then be classed as a natural *affection*; or you may wish it as property—the feeling would then be classed as *self-interested* feeling; or you may wish to give it to a sick person—the desire would then be classed as a *disinterested* feeling.

75. **Æsthetic Feelings.**—The orange may be looked at as an object of beauty; it does not awaken an appetite at all; it gives a feeling or emotion we call “love of the beautiful.” Objects that arouse these feelings arouse the image-forming powers. The sunset, the moonlight, the tempest, the forest, the waterfall, start images that enhance the meaning they themselves possess. The poet hears voices in the breeze; the artist sees pictures in the landscape.

76. **Scientific Emotions.**—The orange may be looked at philosophically—that is, to obtain knowl-

edge about it. The botanist takes a beautiful rose and pulls it to pieces; he puts its organs under a microscope, and is filled with delight at his discoveries. The desire for truth impels men to make distant voyages, to ascend mountains, to labor with retorts and crucibles, with no expectation of reward, except the truth discovered. Those who search for the truth have deep feelings. Sir Isaac Newton saw that the result of the calculations he was making would establish a great truth, and was so overcome that he was obliged to ask a friend to complete them.

77. Ethical Emotions.—Suppose you come into the room and find an orange on the table; you desire it as property, and you take hold of it. You are conscious of a feeling that objects—you feel you ought not. A feeling is aroused because you have settled upon a rule of right-doing, of observing the rights of others; the proposed act collides with the rule. This feeling is termed *conscience*.

The scientific emotions impel to a search after *truth*; the æsthetic are gratified by the *beautiful*; the ethical, by what is *right*. The peculiarity of all these is that the true, the beautiful, and the right are the ends sought—they are ends in themselves. The artist does not paint the beautiful for money; right is not done because it pays; scientific discoveries are not made for profit.

78. Natural and Cultivated Feelings.—The child naturally loves its parents, the parents the child. A man learns to love his country. A child

may cultivate a desire to be at the head of its class ; he may cultivate a prejudice against certain food or races of people, etc. An interest or feeling may be aroused in the mind towards many objects or exercises that is apparently artificial. Philanthropy and gratitude may be cultivated. So also may malevolence, readiness to anger, envy, jealousy, and suspicion.

79. Feeling prompts Action.—You have a feeling of hunger ; you see the oranges—you attempt to possess them. The first inhabitants of the earth felt the cold and storm. This set their thinking-powers in operation ; they built houses. You desire to pursue some profitable life occupation ; you engage in study, or in learning some species of work. You know it is necessary to have a knowledge of arithmetic, and you at once become interested in the study of arithmetic. If you are a teacher, you will want your pupils to learn a lesson ; you will arouse an interest or feeling ; the one who teaches must be able to create an interest.

80. Feelings are Dependent on Knowledge.—You show me a chair. I have no interest ; but you tell me that it was the chair George Washington sat in while President, and a deep feeling is aroused.

NOTES.

81. The sensations the five senses continually pour in upon the mind may be made objects of thought and may be measured with accuracy. You look at a chair, you press your fingers on silk, you snap the vibrant tumbler, you taste of tea or coffee, you smell of a rose ; the *something* that is left in the mind may become very definite if the mind makes it an object of much thought.

The sense of touch may be greatly cultivated : an expert judges of the value of cloth, wool, etc., by passing his hand over them ; a blind man tests money by his fingers. While the taste is lower in rank, yet some persons become very skilful in estimating a quality by using the tongue. A skilled tea-taster will put tea in twenty cups, pour on boiling water, and be able to mark the value of each in money. Pouring these out he will test twenty more, and so on. He forms a concept of fifty-cent tea, thirty-cent tea, etc., and compares the sensation that enters his mind as he tastes each cup with that concept.

The sensations that come through the eye are of the first rank, and are the most permanent. Those that come through the ear rank next. The number of sounds that may be recognized is very great. By attention to the sounds that objects make, as the

rustle of silk or of paper, the quality may be correctly judged. The voice, a violin, a piano, when striking the same note may be distinguished.

82. The Automatic Feature in Mental Operations.—In the structure of the body we find many examples of automatic action. The stomach goes on to digest the food that enters it without the person making an effort. If an object comes near the eye, we wink without thus thinking it will save the eye from injury.

83. Apperception.—The mental operation in the perception of the orange (see sec. 26) was spoken of as though it was a first perception; but when you looked at the color of the orange you had seen other yellow objects, and you comprehended the yellow of the orange through the concept you had formed by seeing them. You comprehended the juiciness of the orange because you had before tasted other juicy things. This past experience that we bring to bear on a sensation enables us to comprehend it in a larger way than if we had not had that experience.

Suppose I show you a rose for the first time; the color and fragrance create sensations that are interpreted in the light of sensations of color and fragrance that have come from the pink, for example. Our conceptive and thinking powers give an enlarged scope to *perception*; this broader perception is termed *apperception*.

84. The child starts out in life with sensation-apprehending, with percept-making, with concept-forming, with concept-relating (judging), and with

judgment-combining powers. The first sensation sets the whole machinery in motion ; when it has another of the same kind it recognizes the likeness. Suppose it was a lump of sugar on the tongue ; if it sees another is offered it expects (thinks) this lump will produce the same pleasure as the other. Thus all of the acts of childhood, the experiments by impressing its teeth on a rubber ring, by striking a spoon on the plate, are directed by a mind that is perceiving, concepting, and thinking about the results. The child has the same mental machinery as the adult, but the adult has knowledge and experience.

85. The adult or older child interprets new sensations in the light of its experience and knowledge. An orange is shown to an adult for the first time ; he proceeds "to find out" something about it, that is, to relate the sensation of taste with other sensations of taste that have been experienced. The questions it asks are, Which does it resemble? Which does it differ from? This connecting the sensation of taste with past sensations of taste is what is meant by *apperceiving* the sensation.

The same operation is gone through with, with the perfume, the feel, the weight, and the color. Each of these is compared with other experiences of a similar kind ; thus they become known. To know a thing is to relate it to a previous experience so that we recognize it as like or unlike some of them. The child is apparently busy getting experiences, or materials for *apperceiving* at a later stage.

86. "Nothing new then can be a subject of knowledge until it is not merely mechanically associated as a passing breeze with the story which I read under a tree, but associated by a psychological process with something in the mind already stored up there, the new seeking among the old for something resembling itself, and not allowing the mind peace until such has been found, or until the new impression has passed out of the consciousness."—ROOPER'S *Apperception*.

QUESTIONS.

- Illustrate the will. (73.)
- Illustrate the feelings. (74.)
- Illustrate æsthetic feelings. (75.)
- Illustrate scientific feelings. (76.)
- Illustrate ethical feelings. (77.)
- Illustrate natural and cultivated feelings. (78.)
- Relation between feeling and action. (79.)
- Relation between feeling and knowledge. (80.)
- What senses are most important. (80.)

NOTES.

- Illustrate the measuring of sensations. (81.)
- Illustrate automatic operations. (82.)
- Illustrate apperception. (83.)
- Illustrate apperception in child. (84.)
- Illustrate apperception in adult. (85.)
- Give Rooper's idea. (86.)

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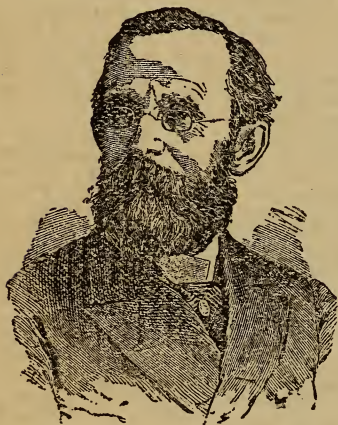
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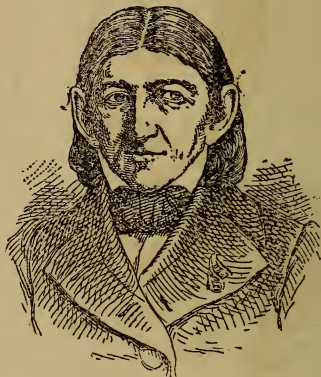
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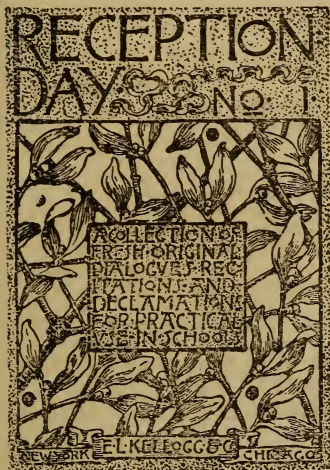
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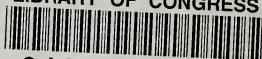
And 4 Songs.

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